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ABSTRACT

THE EVALUATION OF AN EDUCATIONAL INNOVATION CAN SERVE AS AN AID IN THE DEVELOPMENT OF THE INNOVATION, AND IT CAN PROVIDE A BASIS FOR MAKING JUDGMENTS WITH RESPECT TO IT. THIS REPORT DISCUSSES THE INDIVIDUALLY PRESCRIBED INSTRUCTION (IPI) PROGRAM AND ITS APPROACH TO EVALUATION. IPI EVALUATION ACTIVITIES ARE CARRIED OUT IN SIX AREAS: THE PROGRAM PLAN, THE OPERATING PROGRAM, THE SCHOOL CONTEXT, PUPIL BEHAVIOR, TEACHER BEHAVIOR, AND UNPLANNED INFLUENCES AND OTHER VARIABLES. (JY)

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A RATIONALE AND PLAN FOR THE EVALUATION OF THE INDIVIDUALLY PRESCRIBED INSTRUCTION PROJECT

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The evaluation of an educational innovation can serve two basic and related purposes. It can serve as an aid in the development of the innovation, and it can provide a basis for making judgments with respect to it. In the development and trial of an innovation it is important that all components be monitored quite continuously so that rather immediate feed-back can be used to suggest any worthwhile modifications. The continuous monitoring of the program can also serve to investigate many specific contingencies that are basic to the plan. That is, it permits the examination of relationships represented by such statements as, "If we do this, then the result should be this," or "If we modify this practice in this way, then the outcomes should be changed in this way." The developmental functions that can be served by evaluation are probably its most important service.

However, evaluative information is also essential for making decisions concerning whether or not a given innovation should be adopted or whether or not it should be continued after it has been given a trial. This is a matter of determining its value. Basic to this step is some specification of the goals or the values that the innovation is intended to achieve and the identification of the related dependent variables that are to be assessed.

Both of these purposes have been of concern in planning the overall role of evaluation in the development of the project on

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Individually Prescribed Instruction (IPI), a major project of the Learning Research and Development Center at the University of Pittsburgh. The remainder of this paper and the three papers that follow will attempt to illustrate how this concern has been operationalized.

Overview of the IPI Procedure

The IPI procedure is a program designed to achieve a certain type of individualized instruction in grades K through 6 in the subject areas of reading, arithmetic, and science. Basically it has involved the development of extensive and detailed sequences of objectives in each subject area, the preparation of self-study materials that the student can use to master each objective, and a procedure for testing and for individual lesson planning which permit each student to progress through the curriculum sequence at his own pace. The procedure provides for a rather continuous monitoring of the progress of each pupil through the use of placement tests, unit tests, and curriculum embedded tests and the frequent and periodic development of individualized lesson plans or "prescriptions" for each pupil. A few of the basic aspects of the IPI procedure, and aspects which will be given further attention in our presentations here today, include the following:

1. A major portion of pupil class time is spent in individual work (study, test taking, consultation with teacher, etc.).
2. Each pupil is working from an individualized prescriptions based on his level of achievement and certain other factors.

3. Pupils progress at individual rates in such a way that at any given time almost every pupil will be at a different point in the curriculum sequence from that of his classmates.

The Evaluation of the IPI Project

To ensure that the evaluation plan for the Individually Prescribed Instruction procedure will be as complete as possible, it has been found useful to define it as follows. The IPI procedure is (1) a planned program (2) operating in specific ways (3) in some given school context (4) in order to achieve certain goals in pupil behavior and (5) teacher behavior and which may also (6) have certain unplanned influences. So that our evaluation activities will be of as much use as possible, both in developing IPI and in examining its worth, we have given some thought to each of these six elements.

(1) The Program Plan. Any innovation involves a plan which is spelled out in writing and/or in the minds of persons. This plan is an independent variable in the sense that one must study the effect of it on the operation of the program and on the goals that the innovation is designed to achieve. For this purpose it is essential that the plan be described quite completely so that it is known just what this independent variable involves.

The plan for Individually Prescribed Instruction is spelled out in a number of different documents, many of which have been assembled in our draft of a manual for training persons to use the procedure. Its key features are summarized in a brief paper which is considered to be somewhat definitive and which has the title, "The

Essential Elements of Individually Prescribed Instruction." These documents help to define IPI and provide the basis for subsequent steps in its assessment.

Specifying the detailed plan of an IPI program that is put into operation in any school that is planning to adopt this procedure as an innovation should be a basic step in the evaluation program for that adoption. As an aid in assessing the extent to which any school preparing to adopt IPI actually has done the planning necessary for its operation, the staff has developed a questionnaire entitled, "IPI Evaluation Guide" which is to be used as one step in monitoring dissemination efforts.

(2) The Operating Program. A second step in the evaluation of an educational innovation must be a description of how the program actually looks in operation. What do pupils do? What do teachers do? What materials and techniques are used? In assessing the IPI program this step involves securing answers to such questions as: Do pupils proceed at individual paces? Do they work quite independently for most of the time? Is the teacher providing individual help rather than lecturing?--and so on.

The assessment of the operating program requires extensive observation of pupils and teachers. As a first step in this type of assessment a "Pupil Observation Record" has been developed and employed on a trial basis. Dr. Yeager will present a description of its use and of some results obtained. He will also enlarge upon the uses of such data.

Among other things, descriptions of operational aspects of IPI have been useful in the careful study of the results of certain procedures. For example, to study the prescription-writing process it has been important to look at the relationship between the procedure followed by the teacher and the extent to which the prescriptions produced are varied to fit the needs of the student. Dr. Bolvin will present some data bearing on this specific problem.

(3) The School Context. Any school program takes place within a context which has some impact on the way in which the program is operated. Although this context probably cannot be considered as either an independent or dependent variable, it will influence the innovation, and any evaluation plan should make provision for a description of important elements in the context. The IPI evaluation staff has prepared a rather lengthy description of the school context within which the original development of IPI has taken place. This type of study of school context may be particularly important in the dissemination of the innovation in that certain qualities of the school, of its student body, or of the community may actually be important determiners of the success of the innovation.

(4) Pupil Behavior--(Variability in Pupil Achievement as a Dependent Variable). The major dependent variable in essentially all instructional activity is some type of pupil achievement. Changes in what pupils and teachers do in the classroom must be important intermediate goals in most instructional innovations, but such changes are only means to an end, namely, pupil achievement. This is true of

the IPI project. Individually Prescribed Instruction is a planned procedure involving specific types of activities on the part of pupils and teachers but its ultimate accomplishments are to be measured largely in terms of measures of pupil achievement. For this reason major variables that must be assessed are those involving achievement measures.

A major feature of IPI is its detailed specification of the sequences of instructional objectives through which each pupil is to proceed at his individual pace. Pupil progress through these sequences is monitored and guided through the use of special tests specifically designed to measure the stated objectives. Hence, the most valid criteria of pupil achievement are the placement tests, the unit tests, and the curriculum embedded tests that are an integral part of the planned program.

Of course, the major objective of the program is the individualization of instruction. Defining the objective in this way has important implications for evaluation. It means that the basic step in evaluating IPI in terms of pupil achievement must be to examine pupil variability. Do students actually vary in their levels of achievement and in their rates of progress? Is this variability greater than that which is achieved under other methods of instruction? Recent data on this variable will be presented in my (Dr. Cox's) paper which will be given later.

(5) Teacher Behavior. Teachers functioning in an Individually Prescribed Instruction program must use skills that are somewhat different from those used by teachers in more conventional classrooms.

Such skills can be considered both as dependent and independent variables. The extent to which teachers develop and use these abilities may be an important determiner of pupil progress and achievement. For this reason a study of the relationship between teacher mastery of these skills and student behavior and progress is an important step in the development of the IPI project, both at Oakleaf and in any schools to which the program is disseminated. However, the teachers' acquisition of these skills can also be looked upon as an important outcome of the IPI plan and of the procedures that are a basic part of the IPI operation (e.g., studying test results, writing prescriptions, taking part in staff conferences). In this sense these skills represent dependent variables that should be studied in evaluating the effectiveness of the plan and the operation.

Thus far, our assessment of teacher behavior has been done quite informally, but specific and relatively objective procedures are now being developed.

(6) Unplanned Influence on Other Variables. With any type of innovation it is important to be concerned not only with its influence on those variables that it is designed to affect but also with its influence on other variables. This is important both in terms of its possible positive and negative effects. A rather radical departure from typical school practice such as is represented by the IPI procedure is likely to influence both pupils and teachers in a variety of ways.

Some variables of this type that have been investigated in a relatively informal manner include pupil attendance, teacher satisfaction, and parental acceptance. Others will be examined in the future.

This, in rather broad outline, is our evaluation plan and its rationale. The other staff members of the IPI project will enlarge upon specific activities that we have undertaken within the context of this overall rationale.